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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,663	10/11/2000	Jay A. Alexander	10961066-1	4949

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AGILENT TECHNOLOGIES, INC.
INTELLECTUAL PROPERTY ADMINISTRATION, LEGAL DEPT.
P.O. BOX 7599
M/S DL429
LOVELAND, CO 80537-0599

EXAMINER

WEST, JEFFREY R

ART UNIT	PAPER NUMBER
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2857

DATE MAILED: 08/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/686,663

Applicant(s)

ALEXANDER, JAY A.

Examiner

Jeffrey R. West

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 44-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 44-65 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "303" (page 26, lines 17+), "900" (page 42, line 5), "916" (page 42, line 28), "922" (page 43, line 3), and "928" (page 43, line 7). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "932" and "1215". A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of a plurality of informalities. Some of the informalities are as follows:

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On page 40, line 10, the specification describes continuing processing at block 1220 when the operator provides global transition voltages, however, as illustrated in Figure 12, the step of block 1220 is not completed in this situation.

On page 48, lines 23, 26, and 30, the "sort index array" is labeled as "604", "512", and "604".

On page 49, lines 27 and 28 and on page 50, line 5, "pulse locator" is incorrectly labeled "502" instead of "506" as it is labeled on page 49, line 2 and in Figure 5.

On page 51, lines 15 and 26 and on page 52, lines 16 and 28, the "measurements region" is incorrectly labeled "1004" instead of "1008" as it is labeled on page 50, line 29 and in Figure 10A.

On page 52, line 6, the "search criteria" is incorrectly labeled "420" instead of "520" as it is labeled on page 52, line 13 and in Figure 5.

On page 52, line 7, the "pulse locator" is incorrectly labeled "406" instead of "506" as it is labeled on page 52, line 18 and in Figure 5.

On page 52, line 8, the "search array" is incorrectly labeled "416" instead of "516" as it is labeled on page 49, line 28 and in Figure 5.

On page 52, line 22 and on page 53, line 5, the "search criteria" is incorrectly labeled "524" instead of "520" on page 52, line 13 and in Figure 5.

On page 53, line 2, the "selected pulse" is incorrectly labeled "1014" instead of "1004" as it is labeled on page 52, line 19 and in Figure 10A.

Appropriate correction of these, and any other informalities present in the specification, is required.

Claim Objections

4. Claims 7 and 49 are objected to because of the following informalities:

In claims 7, "on said each said plurality of pulses" should be ---on each said plurality of pulses---.

In claim 49, the claimed step is labeled as step "1)", however, parent claim 44 already contains a step "1)".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 7, 16, 23, 29, 50, 53, 54, and 56-64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7 and 29 are considered to be vague and indefinite because they recite, "utilizing said transition times and said pulse type indication" while there is no previous mention of any "pulse type indication" in their respective parent claims. Similarly, claim 50 recites, "wherein said subset of pulses" with no previous mention of any "subset of pulses".

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Claim 16 is considered vague and indefinite because it includes the confusing language, "said measurement parameters includes an indication of the number of signal levels of said acquired signal have a logical representation."

Claims 53, 54, 57, 59, 60-62, and 64 are rejected under 35 U.S.C. 112, second paragraph, because they recite, "said database" while there is no previous mention of any "database" in their respective parent claims.

Further, claim 56 is considered vague and indefinite because it includes the limitation, "said pulse data array" while there is no previous mention of any "pulse data array" in its parent claims.

Claims 23, 58, and 63 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the lack of clarity present in their respective parent claims.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 11, 22, 24, and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,222,028 to LaBarre et al.

LaBarre discloses a pulse analysis/management system, including an oscilloscope (column 6, lines 54-58) that obtains a time-varying analog pulse signal (column 3, lines 67-68), digitizes and stores the samples in an acquisition memory

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(column 7, lines 7-16 and 24-29) and automatically/without operator involvement provides measured characteristics of each of the previously stored plurality of pulses for storage in a searchable data storage array (column 9, lines 44-52) using positive and negative pulse time indications (column 11, lines 33-38). LaBarre also discloses a transition calculator that determines transition signal levels and times at each of one or more transition percentages, wherein each percentage is a percentage of a difference between two signal levels (top and base) having a logical interpretation for comparison (column 9, line 52 to column 10, line 9 and column 12, lines 60-66).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-6, 8-11, 14-17, 19-22, 24-28, 44, 49, 52-57, and 59-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,003,248 to Johnson.

Johnson discloses a probability density histogram display for use is a pulse management system including a digital oscilloscope that obtains an analog time-varying pulse signal, buffers and applies the signal to a sampling bridge that samples the input signal and measures a voltage characteristic of each of the pulses

in series before passing the voltage value to a holding circuit and an ADC that digitizes the voltage levels and stores the digitized voltage samples in a memory with each sample uniquely identified by a single digital word identifier (column 3, lines 19-31). Johnson then discloses a means for automatically (without user involvement) using the previously obtained/stored values to form a histogram (column 3, lines 31-37) of a distribution of the number of occurrences that the acquired signal is obtained over a specified time range (column 1, lines 63-68).

Johnson discloses a means for determining one or more modes of the histogram that has a logical interpretation (i.e. digital values stored in the memory indicating the number of occurrences) indicating which signal levels occur most frequently in the histogram (column 4, lines 17-24).

Johnson discloses and a transition calculator/data analyzer for determining/measuring the transition signal levels and times at one or more transition percentages, including base and top levels of the pulses, at user-defined and/or 10%, 50%, and 90% levels (column 1, lines 34-45, column 2, line 42, and column 4, lines 24-30) through a user interface (column 3, lines 13-15). Since these values are statistical data with respect to the overall series of pulses, they are considered to be global. Johnson also discloses that the memory holding the voltage values is searchable in that the values are searched to determine if a particular amplitude meets a predetermined threshold percentage wherein if the predetermined threshold is reached, the amplitude occurrence is displayed (column 4, lines 34-44).

Johnson also discloses using the method to analyze, and store data from, a plurality of input channels each with corresponding graphs on a single display (column 3, lines 51-54). Figure 4 of Johnson discloses a sine wave in a time-domain having two signal levels producing a corresponding histogram with two peaks "200A" (i.e. bimodal). Further, since the invention of Johnson teaches displaying a plurality of data graphs corresponding to a plurality of input sources, wherein the histogram display for each source is optional (abstract) it is considered inherent that the source must provide some type of indication to indicate to the processing system memory that the histogram is to be calculated and displayed. Johnson also discloses displaying the results of the predetermined and operator defined statistical mode, probability value, and percentage measurements (i.e. operator defined distal and proximal percentage levels) (column 2, line 42 and column 4, lines 17-44).

With respect to claim 17, the limitation requiring that the acquired signal be an alternative mark inversion communication signal that transitions between three signal values, is considered to be an intended use limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). In the instant case, the structure of Johnson is capable of analyzing an alternative mark inversion communication input signal. Therefore, as understood by one having ordinary skill

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in the art, and admitted by Applicant on page 27, lines 29-30, the mode finder of Johnson would identify all the modes of the histogram corresponding to the acquired signal, such as three modes for an alternative mark inversions signal. Further, it is considered well known that that an alternate mark inversion signal transitions between three signal values (see the supplied definition AMI).

With respect to claims 52 and 57, Johnson also discloses storing the pulse data as a single digital word data unit in a buffer/database/array (column 3, lines 38-50), having use in implementing oscilloscope applications, wherein the single data unit uniquely identifies each pulse of the acquired signal, the measured amplitude of the pulse, as well as the corresponding time of occurrence with respect to the other pulses indicating the time corresponding to when a (rising-edge) trigger event caused the storage of the signal (column 5, lines 21-30).

With respect to claims 60-62 and 64, the pulse data and digital word identifiers are automatically stored in a sequential order of occurrence in the buffer in response to the initial sampling and conversion of the input signal (column 3, lines 38-50).

As noted above, the invention of Johnson teaches all the features of the claimed invention except for first storing the sampled data in an acquisition memory before performing pulse measurements for storage in a second memory.

Although the invention of Johnson doesn't specifically disclose first storing samples of the input signal in an acquisition memory and then measuring the voltage levels of the samples for storage in a subsequent searchable memory, this feature is not considered to make the claimed invention patentable over the prior art. First, the

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invention of Johnson does supply the input signal to buffering and holding circuitry. Secondly, the invention of Johnson does disclose a functionally equivalent method for forming a histogram based upon a plurality of previously-acquired pulse measurements thereby allowing the formation of a histogram that provides the number of occurrences of each of a plurality of pulse amplitudes obtained over a time-interval. Thirdly, while the invention of Johnson teaches initial sampling and pulse voltage measurement in one processing structure rather than separate structures, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide this processing step using separate structures (i.e. sampling the input data for storage in a first acquisition memory, followed by measuring the voltage values of the pulse samples for storage in a second searchable memory) since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art (see *Nerwin v. Erlichman*, 168 USPQ 177, 179).

11. Claims 7, 23, 29, 45-48, 51, and 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of U.S. Patent No. 3,656,060 to Bauernfeind et al.

As noted above, the invention of Johnson teaches all the features of the claimed invention except for specifying that the type of pulses (i.e. positive or negative) be inputted before processing.

Bauernfeind teaches a time interval measuring and accumulating device, such as an oscilloscope (column 1, lines 7-9), wherein the user of the oscilloscope specifies the input pulses as either positive or negative pulses before pulse processing occurs (column 2, lines 45-47).

It would have been obvious to one having ordinary skill in the art to modify the invention of Johnson to include specifying that the type pulse (i.e. positive or negative) be inputted before processing because Johnson does teach sampling the input data based upon a rising edge of each pulse of the sample clock, and Bauernfeind suggests that the combination would have insured correct counting of a plurality of pulses, such as counting the occurrences of pulses for use in the histogram of Johnson, by defining the initialization of the count to occur on the leading or trailing edge as required, as well as allowed for proper triggering and detection of the pulses as known in the art (column 1, lines 30-60).

12. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of U.S. Patent No. 4,721,958 to Jenkin.

As noted above, the invention of Johnson teaches many of the features of the claimed invention including storing, in memory, pulse data with corresponding amplitudes and a number of occurrences of each signal obtained in order to form a histogram, but does not specify that the data be stored in a table.

Jenkin teaches a real-time pulse processor including a counter for counting the occurrences of a particular pulse amplitude (column 16, line 58 to column 17, line

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20) and stores the number of occurrences in a table to create a corresponding histogram (column 17, lines 21-26).

It would have been obvious to one having ordinary skill in the art to modify the invention of Johnson to include specifying that the pulse data be stored in a table, as taught by Jenkin, because the combination would have provided a method, functionally equivalent to the buffer method of Johnson for storing the pulse data using a easily accessible and organized structure as is well-known in the art.

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of U.S. Patent No. 5,410,617 to Kidd et al.

As noted above, the invention of Johnson teaches all the features of the claimed invention except for including a smoothing function to identify any of the one or more modes of the histogram.

Kidd teaches a method for adaptively thresholding grayscale image data by obtaining the image data and mapping the data in a histogram, using a look-up table, and incorporating a smoothing function (column 8, lines 37-54) to find peaks in the histogram (column 9, lines 13-15).

It would have been obvious to one having ordinary skill in the art to modify the invention of Johnson to include a smoothing function to identify any of the one or more modes of the histogram, as taught by Kidd, because Johnson does teach that the peaks of the histogram correspond to the modes of the histogram and Kidd suggests that the combination would have provided better peak/mode detection by

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removing very small peaks and rapid excursions in the histogram (column 8, lines 64-65).

Response to Arguments

14. Applicant's arguments, filed 15 June 2003, with respect to claims 1-29 and 44-65 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent No. 6,570,592 to Sajdak et al. teaches a system and method for specifying trigger conditions of a signal measurement system using graphical elements on a graphical user interface including a pulse width dialogue box allowing a user specify the sense (positive or negative) and duration of the pulse that will satisfy the trigger condition for the signal.

U.S. Patent No. 4,590,941 to Saulson et al. teaches a cardiac pacer system that links pulse duration with amplitude so that the programmed amplitude can be determined by observation of pulse width on an oscilloscope, wherein a table provides the data including a channel indicator.

U.S. Patent No. 4,731,863 to Sezan et al. teaches a digital image processing method employing histogram peak detection through the use of a smoothing function.

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U.S. Patent No. 5,343,405 to Kucera et al. teaches automatic extraction of pulse-parametrics from multi-valued functions.

U.S. Patent No. 4,716,345 to Shank et al. teaches an automatic pulse display including two trigger generators, one which is set to trigger a positive pulse, and one which is set to trigger a negative pulse, in order to insure the detection of all the pulses in a pulse train.

<http://www.erg.abdn.ac.uk/users/gorry/course/phy-pages/ami.html> provides the definition of "alternate mark inversion"


16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

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jrw
August 2, 2003



MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800